

**SPRINKLER PROVIDED WITH A BUILT-IN MECHANISM FOR
DISPENSING DETERGENT**

RELATED U.S. APPLICATIONS

Not applicable.

**STATEMENT REGARDING FEDERALLY SPONSORED
RESEARCH OR DEVELOPMENT**

Not applicable.

REFERENCE TO MICROFICHE APPENDIX

Not applicable.

FIELD OF THE INVENTION

[0001] The present invention relates generally to a sprinkler, and more particularly to a sprinkler which is provided with a built-in mechanism for dispensing detergent.

BACKGROUND OF THE INVENTION

[0002] The present invention is a modified sprinkler. The difference between the modified and conventional sprinklers lies in that the former one has a rod-shaped configuration whereby the distance between handle and sprinkler head can be enlarged, so it can be applied to spray farther objects. In addition to its applications for conventional horticulture, this sprinkler is often applied to cleaning purposes. However, there are also some disadvantages. As this sprinkler can only spray water owing to its structural design, detergent is required where applicable. That is to say, independent work for the detergent is expected, leading to a lower performance. Thus, it is necessary to make some breakthrough innovations for more convenient applications of such sprinkler.

[0003] Therefore, based upon aforementioned disadvantages of the conventional sprinkler, this industry assumes the responsibility to make efforts to develop a utility model, which is able to mix detergent rapidly during control of discharge and offer a more convenient and effective application.

BRIEF SUMMARY OF THE INVENTION

[0004] 1. To provide an innovative sprinkler that is composed of a shunt, a water-control shaft, a switch and a detergent storage pipe. This is a preferred option of this industry in conformity with the requirements of a new patent.

[0005] 2. Based upon this modified structural design, the end-users can rotate the switch to activate the water-control shaft, and have optional modes of supplying either water or mixed detergent via the variable angles/positions of main notch and secondary notch, thereby improving the performance of such sprinkler to serve major purposes.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0006] FIG. 1 shows a perspective view of the preferred embodiment of the present invention.

[0007] FIG. 2 shows an exploded view of a detergent dispensing mechanism of the present invention.

[0008] FIG. 3 shows a cross-sectional view of the closing state of waterflow of the present invention.

[0009] FIG. 4 shows a cross-sectional view of the closing state of waterflow of the present invention from another angle.

[0010] FIG. 5 shows a cross-sectional view of the connected state of secondary notch and diversion hole of the present invention.

[0011] FIG. 6 shows the cross-sectional view as of FIG. 5 from another angle.

[0012] FIG. 7 shows another cross-sectional view of the connected state of secondary notch and diversion hole of the present invention.

[0013] FIG. 8 shows the cross-sectional view as of FIG. 7 from another angle.

DETAILED DESCRIPTION OF THE INVENTION

[0014] The features and the advantages of the present invention will be more readily understood upon a thoughtful deliberation of the following detailed description of a preferred embodiment of the present invention with reference to the accompanying drawings.

[0015] Firstly, refer to the modified examples of sprinkler with built-in mechanism for dispensing detergent, as shown in FIGS. 1-4. This sprinkler includes:

[0016] a shunt 10 of a cylinder type with an axial hole 11 at the center. The middle section of shunt 10 is provided with a radial notch 12 connected vertically to above-mentioned axial hole 11. The base of shunt 10 is equipped with a pipe connector 13 to link existing aqueduct connector. The top center of shunt 10 is provided with a horizontal notch 112 at the outlet of axial hole 11. Both sides of this shunt 10 are vertically equipped with diversion hole A1 and diversion hole A2. The bases of both diversion holes are vertically connected to radial notch 12;

[0017] a water-control shaft 20 of a round rod shape with a rotatable radial notch 12 of shunt 10. The middle section of the rod is provided with a concave main notch 21 with its width larger than the radius of the rod, as well as an opposite water panel 22. Both of the axial sides of main notch 21 are equipped with a secondary notch B1 and a secondary notch B2. The radial positions of secondary notches B1 B2 are staggered for disalignment, of which opposite internal edges of secondary notches B1B2 are connected to main notch 21. Along with the rotation of water-control shaft 20, the radial

side of secondary notch B1 will be firstly connected to diversion hole A1 (as shown in FIG. 5). Then the radial side of secondary notch B2 will be connected to diversion hole A2 (as shown in FIG. 7);

[0018] a switch 30 provided at one side of water-control shaft 20 and exposed to the surface of shunt 10. The end-user can hold it to rotate water-control shaft 20;

[0019] a detergent storage pipe 40 provided at the top of shunt 10 and composed of an internal pipe 41 a pipe case 42. The base of the pipe case 42 is attached to the top of shunt 10 while the top of pipe case 42 is provided with a reducing linkage member 43 for the connection of preset sprinkler head fittings. The inlet of detergent 44 is reserved at the top of one side of pipe case 42 and capable of providing a hood 45 to avoid the leakage of detergent W1. The base 411 of the internal pipe 41 is inserted into the horizontal notch 112 at the top of shunt 10 while the top 412 of the internal pipe 41 is inserted into the linkage member 43 of pipe case 42 to form a notch hole 46. The base of internal pipe 41's orifice 410 is connected to the axial hole 11 of shunt 10 while the top of internal pipe 41's orifice 410 runs upwards until the top of linkage member 43 of pipe case 42 so as to form an outflow tube. Based upon the compartment between internal pipe 41 and pipe case 42, a circular detergent tank 47 can be shaped. Moreover, the base of the detergent tank 47 is connected to the diversion hole A1, A2 of shunt 10.

[0020] a convex ring edge 23 be formed at one side of water-control shaft 20 far away from the switch 30, so as to provide a notch edge 121 at the opposite side of shunt 10's radial notch 12 as shown in FIG. 3 and insert spacer by the convex ring edge 23. A screw hole 24 is provided at one side of water-control shaft 20 so as to place a punching hole 31 at the center of switch 30. A screw bolt 32 is applied to cross through the punching hole 31 of the switch 30, and then fastened to the screw

hole 24 of water-control shaft 20. At the same time, it is capable of assembling and positioning the switch 30 and water-control shaft 20 as shown in FIG. 3.

[0021] Moreover, the pipe case 42 of the detergent storage pipe is constructed of transparent materials, so as to enable the end-users to observe clearly internal residual detergent W1.

[0022] Based upon the structure and composition as above specified, the present invention makes a detailed description as follows.

[0023] As shown in FIGS. 3-4, the water-control shaft 20 is in a watertight state. In such case, the main notch 21 at middle section of the rod faces upwards and the water panel 22 faces downwards to form an axial hole 11, thus preventing upward waterflow.

[0024] As shown in FIGS. 5-6, when the end-user rotates the switch 30 and simultaneously activate the water-control shaft 20 to rotate towards the preset direction of opening, the main notch 21 will firstly register the axial hole 11 and let the water W2 flow through pipe connector 13 for discharge. At the same time, the radial end of secondary notch B1 is connected to the diversion hole A1, for the internal side of the secondary notch B1 is linked to the main notch 21, thus the pressure of water W2 will fill into detergent tank 47 along secondary notch B1 and diversion hole A1 to serve the purpose of yielding pre-compression upon internal detergent W1.

[0025] As shown in FIGS. 7-8, when the end-user continues to rotate the switch 30, the radial side of secondary notch B2 is connected to the diversion hole A2, for the internal side of the secondary notch B2 is also linked to main notch 21, and the diversion hole A2 linked to detergent tank 47. In such case, the detergent W1 within detergent tank 47 is subjected to the pre-compression of upper sections, the accumulated pressure will force the detergent W1 to flow through diversion hole A2, secondary notch B2, main notch 21, axial hole 11 and orifice 410 of internal pipe 41, thus forming

a waterflow mode of mixed detergent W1. Based upon the fact that the constant register waterflow of diversion hole A1 and secondary notch B1 is more than that of diversion hole A2 and secondary notch B2, the detergent W1 within detergent tank 47 is continuously forced out by water W2, then mixed and deconcentrated gradually.